

SECTION 15500

FIRE PROTECTION

PART 1 - GENERAL

0.1 DESCRIPTION OF WORK

- A.** Work Included: This Section specifies interior fire protection systems. Applicable requirements of Section 15050 - BASIC MATERIALS AND METHODS FOR MECHANICAL WORK apply to the Work of this Section. Provide the following systems:
1. Dry-pipe sprinkler system.
 2. Wet-pipe sprinkler systems.
 3. First aid hose and standpipe system.
 4. Fire extinguishers.
- B.** Related Work: The following items are not included in this Section and will be performed under the designated Sections:
1. Section 02713 - EXTERIOR WATER DISTRIBUTION SYSTEMS.
 2. Section 07840 - FIRESTOPPING.
 3. Section 09900 - PAINTING.

0.2 SUBMITTALS

- A.** Working Plans and Certificates. Provide Engineer with number of copies as directed of approved items complying with requirements of the following paragraphs.
- B.** Shop Drawings
1. General
 - a. Provide drawings made at minimum 1/4-inch equals one-foot scale.
 - b. Provide drawings complying with applicable requirements of NFPA No. 13 and NFPA No. 14.
 2. Submit drawings for standpipe and sprinkler systems, showing layout, location, size of system components, including complete reflected ceiling and above ceiling plans, and electrical layout and installation requirements; and details of materials and methods of attachment and sleeve construction.
- C.** Manufacturer's Literature: Provide literature completely describing products, including performance curves and wiring diagrams.

- D.** Certificates: Provide certificates certifying compliance of materials and work with standards designated.
- E.** Operation and Maintenance Data:
 - 1. Provide complete instruction, including catalog cuts, diagrams, drawings and other descriptive data covering proper operation, maintenance of each type of system installed, and necessary information for ordering replacement parts. Additionally, include copy of NFPA 13A and 198.
 - 2. Provide copies of complete instructions capable of being posted at each alarm-check valve location; in the format, and materials and method of attachment, as accepted by the Engineer.
- F.** Maintenance Materials. Submit in manufacturer's standard unopened containers; with label affixed, showing manufacturer's name, brand name, and type of item contained within; products complying with requirements of Part 2 "Dry and Wet Pipe Sprinkler Systems" Article.

0.3 DELIVERY, STORAGE AND HANDLING

- A.** Protection
 - 1. Protect work, equipment and materials from dirt, water chemical or mechanical damage.
 - 2. Close pipe openings with caps or plugs during installation.

0.4 QUALITY CONTROL

- A.** Requirements of Regulatory Agencies
 - 1. Provide fire protection systems conforming with requirements of NFPA Nos. 10, 13 and 14 and requirements of governmental agencies having jurisdiction.
 - 2. Working Plans and Certificates: Provide working plans, calculations and materials and test certificates, to governmental agencies having jurisdiction as required for approval.
 - 3. Provide hose and hose valves approved by local fire department. Additionally, provide copy of certificate of approval to the Engineer.
 - 4. Fire-Rating Testing Agency Requirements: Testing agency for fire rating certification shall have approval of authority having jurisdiction.

PART 2 - PRODUCTS

0.1 GENERAL

- A.** Provide materials and equipment that have fire rating certification, listing and label where applicable, complying with requirements of this Section.

0.2 DRY STANDPIPE

- A.** Pipe: ASTM A53, galvanized steel, Schedule 40, with square-cut grooved ends.
- B.** Fittings: Galvanized malleable iron with square-cut grooved ends.
- C.** Couplings
 - 1. Provide couplings designed for use with grooved pipe, galvanized malleable iron, complete with plated nuts and bolts.
 - 2. Nuts: Tamperproof type.
 - 3. Gaskets: As recommended by manufacturer.
- D.** Fire Hose Valves: 2-1/2 inch angle type valve as approved by the local fire department.
- E.** Pipe Sleeves
 - 1. Through Interior Walls and Floors: Galvanized steel sleeves, ASTM A53.
 - 2. Through Exterior Structural Element: As indicated.
- F.** Check Valves: Swing type, 200 psi working pressure, iron body, bronze trim, bolted cap, renewable seat and disc and removable hinge pin.

0.3 FIRST AID HOSE

- A.** Fire Hose Reels: Stored, folded on racks in fire cabinets, as indicated, 125 feet of rubber lined hose and fog nozzle. Valve with local fire department threads.

0.4 FIRE EXTINGUISHERS

- A.** General
 - 1. Provide portable type capable of covering multiple hazards unless otherwise indicated.
 - 2. Provide extinguishers sized as indicate, complying with requirements of Part 1 "Submittals" Article, complete with support brackets, suitable carts or reels as indicated.

0.5 DRY-AND WET-PIPE SPRINKLER SYSTEMS

A. General

1. Sprinklers
 - a. Provide sprinklers of listed types specifically selected for areas and hazards they are to protect, such as standard, corrosion resistant, wax-coated, upright, pendent, chrome-plated or other type as indicated.
 - b. Provide number of spare sprinklers as indicated.
2. Sprinkler Alarm Systems: Provide alarm systems including alarm check valves, pre-action and deluge valves and accessories as required for complete systems including local and remote alarms as required by authority having jurisdiction.

0.6 PIPING TO UNDERGROUND WATER SUPPLIES

- A.** Refer to Section 02713 - EXTERIOR WATER DISTRIBUTION SYSTEMS.

PART 3 - EXECUTION

0.1 GENERAL

- A.** Welding will not be permitted except on specific written authorization of the Engineer. When authorized, welding shall be in accordance with NFPA No. 13 and 14 and AWS D10.9 level AR-3.
- B.** Provide fire-water piping subject to freezing with electric heat tracer lines and insulation as indicated.
- C.** Provide for thermal expansion of piping by loops or expansion joints in accordance with requirements of Part 1 "Submittals" Article. Additionally, provide anchors, guides and other devices as required for proper support and as indicated.
- D.** Provide for complete drainage of the systems. Run piping with sufficient pitch and provide drain valves at low points in piping.
- E.** Valves and Vents
1. Valves
 - a. Install sectionalizing valves where indicated.
 - b. Provide valves with switches arranged for indicating closure or partial closure of valve where indicated.
 2. Vents: Provide manual air vents as indicated and as required for complete functioning systems.

- F. Connections and Joints: Provide threaded connections, grooved, and brazed and soldered joints complying with requirements of NFPA No. 13.

0.2 DRY STANDPIPE

- A. General: Install in accordance with applicable requirements of Part 1 "Submittals" Article for standpipe and hose systems. Install pipe, supports, attachment of supports to structure and equipment.
- B. Support piping so that hangers shall sustain load and properly secure piping to prevent vibration when piping is in use. Support intervals shall not exceed ten feet. Provide at least one hanger for each pipe section. Hangers and clamps shall also be installed at each offset or change in direction and at each hose valve connection. Additionally, support pipe as indicated.
- C. Pitch piping where necessary so that entire system can be drained. Provide 1-1/4 inch drain valves at low points in system not drainable by fire hose valve.
- D. Provide piping passing through walls and other locations as indicated, with sleeves with annular space between pipe and sleeve sealed in approved manner.
- E. Grooved Piping
 1. Prepare and groove piping in accordance with the coupling manufacturer's instructions. Pipe shall be free from indentations, projections, or roll marks for proper gasket seating.
 2. Before installation verify that gasket supplied is as specified for service intended.
 3. Apply gasket lubricant supplied by coupling manufacturer so that gasket will not be pinched upon assembly. Apply thin uniform coat over exterior surface of gasket or the pipe and coupling surface.
 4. Install gasket and coupling in accordance with the manufacturer's instructions.

0.3 FIELD QUALITY CONTROL

- A. Preparation
 1. General: Prior to acceptance testing, fire protection systems shall be flushed and then disinfected.
 2. Flushing: Flush fire protection systems with clean water until it is free of scale, slag, dirt grease or other foreign material in accordance with applicable requirements of Part 1 "Submittals" Article.
 3. Disinfection: Disinfect systems by filling them with solution containing not less than 50 parts per million of chlorine and let stand

for minimum 24 hours. Then flush systems with clean water until residual chlorine content is not greater than 0.2 parts per million.

B. Acceptance Testing Certification and Approvals

1. Perform acceptance testing and certification of fire protection systems and obtain approvals in accordance with applicable requirements of Part 1 "Submittals" Article. Testing must include water flow and pressure per NFPA.

PART 4 - MEASUREMENT AND PAYMENT

0.1 MEASUREMENT

- A.** Fire protection systems will be measured as per each complete in place, including all preparation, fixtures, accessories and incidentals.

0.2 PAYMENT

- A.** Payment for fire protection systems will be made at the Contract unit price for the quantities as specified above.

0.3 PAYMENT ITEMS

ITEM NO.	DESCRIPTION	UNIT
1551.014	FIRE PROTECTION	EA

END OF SECTION